REMARKS

Applicant thanks the examiner for the careful examination given to the present application. The application has been reviewed in light of the Office action, and it is respectfully submitted that the application as amended, is patentable over the art of record. Reconsideration of the application as amended is respectfully requested.

Claims 1, 4, 6, 9, and 14 have been amended to more clearly point out the subject matter which applicant regards as the invention. The Specification has been amended to correct typographical errors. No new matter has been added

Applicant proposes to amend the drawing of Fig. 1 as shown in red on the enclosed copy. The examiner's approval of the proposed change is requested.

Claims 1 and 4 are objected to due to informalities. Claims 1 and 14 have been amended to correct the informalities.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claim 1 has been amended and antecedent basis has been provided.

Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Bowers et al. (U.S. Patent No. 5,985,687). For the following reasons, the examiner's rejection is respectfully traversed.

Bowers does not teach or disclose a "silicon block being covered by a silicon oxide layer" or "cleavage of the silicon block along the cleavage area to detach the surface layer fixed to the support from it, and thinning or respectively thickening the said surface layer until a thickness substantially equal to the said determined thickness, is obtained" as recited in claim 1.

Bowers teaches the use of InP, GaAs, and sapphire substrates and GaN and InN layers (Abstract; Fig. 1 and 2; and col. 3, line 60, to col. 4, line 19). However, there is no mention in Bowers of using a silicon block or of a silicon block being covered by a silicon oxide layer. Therefore, Bowers does not teach all the elements of the claimed invention.

Bowers discloses thinning of the sapphire substrate before the cleaving step to make the

sapphire substrate thin enough for cleaving (col. 6, lines 11-21). Bowers does not mention thinning of any substrate or layer after the cleaving step. Thus, Bower does not teach all the elements of the claimed invention.

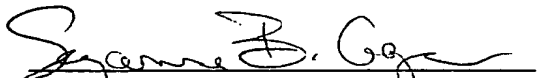
Bowers discloses a method for fabricating a cleaved facet along a vertical plane in GaN epitaxially films grown on sapphire, where the **vertical plane is perpendicular** to the sapphire surface (col. 1, lines 52-63; claim 1). The GaN layer with sapphire substrate is fused to a InP or GaAs substrate; the sapphire substrate is thinned; and then the InP/GaAs substrate is cleaved to produce the crystal facet parallel to the GaN layer (Abstract; col. 5, lines 26-33; claim 1). Therefore, Bowers teaches cleaving of a substrate perpendicularly to the growth surface. Bowers does not disclose cleaving substantially parallel to the growth surface. Thus, Bower does not teach all the elements of the claimed invention.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 33019.

Respectfully submitted,

PEARNE & GORDON LLP

By: 
Suzanne B. Gagnon, Reg. No. 48924

526 Superior Avenue, East
Suite 1200
Cleveland, Ohio 44114-1484
(216) 579-1700

Date: December 19, 2002

MARKED UP COPY SHOWING CHANGES

IN THE SPECIFICATION:

The paragraph beginning on page 5, line 18, beginning "In this case the determined thickness...", has been amended in the following manner:

In this case the determined thickness means the thickness of the surface layer of silicon necessary to obtain a given optical behavior. For example, it may be a thickness equal to or proportional to $\left[\frac{\ddot{e}}{4n_s}\right] \frac{\lambda}{4n_s}$ where λ is the working [length] wavelength of produced or received light and n_s is the refraction index of silicon.

The paragraph beginning on page 11, line 19, beginning "It is observed that after cleavage...", has been amended in the following manner:

It is observed that after cleavage has terminated, the surface layer [22] 22a remains fixed to the platform 10 through the silicon oxide layer 12a.

The paragraph beginning on page 11, line 27, beginning "Figure 4 shows the assembly consisting of the platform...", has been amended in the following manner:

Figure 4 shows the assembly consisting of the platform 10, the oxide layer 12a and the surface layer [22] 22a. The assembly is inverted compared with the assembly in Figure 3. An arrow 24 indicates the treatment applied to adjust the thickness of the surface layer.

The paragraph beginning on page 12, line 3, beginning "In the example described, the initial thickness...", has been amended in the following manner:

In the example described, the initial thickness of the surface layer [22] 22a is greater than

the required thickness. Thus, the thickness adjustment treatment consists of thinning the layer. This treatment may be made by polishing or by a series of surface oxidation and selective etching operations to eliminate the oxide formed each time.

The paragraph beginning on page 13, line 5, beginning "The surface of the silicon oxide surface layer...", has been amended in the following manner:

The surface of the silicon oxide surface layer 12b covering the silicon block 20b is brought into contact and is glued onto the silicon layer [22b] 22a by molecular bonding, the thickness of the silicon layer [22b] 22a having been adjusted before this operation.

IN THE CLAIMS:

Claims 1, 4, 6, 9 and 14 have been amended in the following manner:

1. (Amended) Process for the formation of a silicon layer (22a, 22b, 32, 34) for optical purposes with a [given] determined (optical) thickness, on a support (10), characterized in that it comprises the following steps:

a) Molecular bonding of a silicon block (20a, 20b) on the support on which there may or may not already be other layers, the silicon block having a surface layer (22a, 22b, 32, 34) delimited by a cleavage area (21) [approximately] substantially parallel to its surface, and with a thickness greater than [(or less than)] or respectively less than the said determined thickness, and the silicon block being covered by a silicon oxide layer (12a, 12b) brought into contact with the support during bonding,

b) cleavage of the silicon block along the cleavage area to detach the surface layer fixed to the support from it,

c) thinning [(or thickening)] or respectively thickening the said surface layer

until a thickness [approximately] substantially equal to the said determined thickness, is obtained.

4. (Amended) Process according to claim 1, in which a hydrogen implantation is performed before step a) through one of the faces (23) of the silicon block to form an embrittled area (21) in the block (20a, 20b), said embrittled area extending [approximately] substantially along a plan parallel to the [said face] surface of said block and forming the cleavage area, the implantation energy being adjusted to form the cleavage area at a depth which is [either] greater than or respectively less than the determined thickness.

6. (Amended) Process according to claim 5, in which the silicon oxide layer [may be] is formed by a chemical vapor deposition [using a Plasma Enhanced Chemical Vapor Deposition (PECVD) process] method or by thermal oxidation of silicon.

9. (Amended) Process according to claim 7, comprising the formation of [a] said second mirror by deposition of a metallic layer on the cavity.

14. (Amended) Process according to claim 12, in which the optical thickness of the silicon layer [(34)] (32) is equal to $\frac{\lambda}{4n_s}$, where λ is the working wavelength of the optical structure and n_s is the refraction index of the silicon.